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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/964,935 | 09/27/2001 | Christian Unruh | 450117-03594 | 2193 |

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NEW YORK, NY 10151

| EXAMINER | |
|---|---|
| WU, JINGGE | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2623 | |

DATE MAILED: 05/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/964,935 | UNRUH ET AL. | |
| | Examiner | Art Unit | |
| | Jingge Wu | 2623 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *18 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-11 and 14-17* is/are rejected.

7)☐ Claim(s) *12 and 13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

### *Response to Amendment*

Applicants' response to the last Office Action, filed on March 12, 2005 has been entered and made of record. The rejection under 35 USC §102 over Minami is expressly withdrawn. A non-final action follows.

### *Remark*

The Examiner believes that Minami, even through his purpose was not to measure the quality of the image, has to do the measurement in order to reduce the blocking artifacts. In fact, he uses the measurement to control the operation of the process of reducing the blocking artifacts. Thus, Minami does teach at least part of what Applicant tries to do. Finally, the main purpose of measuring the distortion of the image quality is to reduce the blocking artifact of the decoded images.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-11, 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the article "Measuring defects in images restored using DCT prediction approaches" to Lakhani et al. (a reference of record) in view of the article "An optimization approach for removing blocking effects in transform coding" to Minami et al. (a reference of PTO 1449)

As to claim 1, Lakahani discloses a method to rate a discrete decoded picture (measuring defects) in respect to its quality on the basis of MSDS ( section 2 (b)) , staircase artifacts (truncation), or blurriness in the sharpen edges (section 3).

Lakahani does not explicitly mention a rate function.

Minami, in an analogous environment, discloses a distortion rate measurement by calculating a picture quality rating function (PQRF; PQRF-B) (see equation 13 and 14) on basis of an information about artifacts (ARI; MSDS, equation 13) within the discrete decoded picture and a coding information (CRI; Mquant, equation 14, coding information, i.e., quantization vectors or scale factors)) which was used for discrete coding the picture (abstract, page 76, section IV and page 77-78, section V, especially equation 13 or 16 and 14, note that the equations 13 and 14 are also represented a function of picture quality, i.e., the minimizing the function is the better quality).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the function of Minami in the method of Lakahani in order to accurately measure the quality of decoded picture so as to decrease the blocking artifacts (Minami, section I)

As to claim 2, Minami further discloses (AR1, equation 13 or 16) is a criterion of discontinuity (MSDS) and said coding information (CR1) is a scaling factor (equation 14).

As to claim 3, Minami further discloses a method according to claim 2, characterized by retrieving said scaling factor from the discrete decoded picture on basis of a number of bits used for discrete coding the picture (fig. 3, page 75, section II).

As to claims 4-7, Minami further discloses determining said criterion of discontinuity (MSDS) based on a rating of transitions in-between neighbored blocks of the discrete decoded picture (figs. 5-6), which is characterized by in-between neighbored blocks dependent on at least one respective main gradient and one respective sub gradient of a transition in-between neighbored blocks (figs. 5-6) or by rating transitions in-between neighbored blocks based on a sum of a squared difference of all respective main gradients and all respective sub gradients of a transition in-between neighbored blocks (figs. 5-6), or rating transitions in-between neighbored blocks based on a sum of all transitions in-between neighbored blocks (figs. 5-6) (page 76-77, section IV).

As to claim 8, Minami further discloses determining said picture quality rating function distinct in respect to horizontal and vertical transitions (page 77 equation 6, figs. 5-6, note that F and D denote horizontal, B and D represent the vertical direction).

As to claims 9-10, Minami further discloses a function indicates a maximum quality in case the scaling factor indicates a high correlation with picture (page 78, equation 14, the factors must be under constraints upper and lower limits and indicates a maximum quality in case the criterion of discontinuity (MSDS) indicates a small discontinuity (page 78, equation 13 or 16 , minimizing 13 ro 16means better picture quality).

As to claims 14-16, Minami further discloses DCT (abstract), picture decoding and/or post-processing method, and encoding and/or pre-processing method (page 79, figs. 8-9, note that encoding and decoding are inherent to obtain the picture).

As to claim 17, the claim is corresponding computer program product claim to claim 1, the discussions are addressed with regard to claim 1.

As to claim 11, the combination of Lakahani and Minami does not explicitly mention the sum of function of quantization factors.

Examiner takes Official Notice that the feature of the quantization factor as a function of picture quality is notoriously well known in the art.
It would have been obvious to one having ordinary skill in the art at the time the invention was made to use both MSDS and quantization factor function summed as a quality evaluation function to a decoded picture in order to fully measure the quality of decoded picture.

### *Allowable Subject Matter*

Claims 12 and 13 are objected to as being dependent upon a rejected base claim, but would be **allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.**

### Contact Information

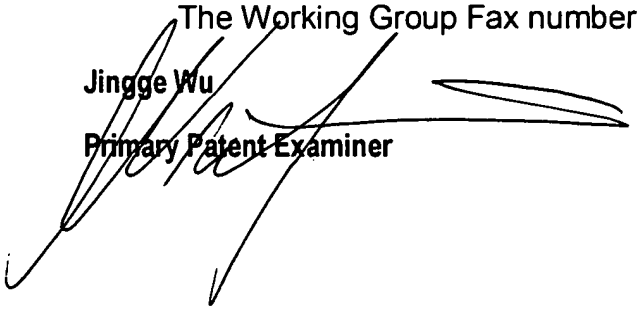
Any inquiry concerning this communication or earlier communications should be directed to Jingge Wu whose telephone number is (703) 308-9588. He can normally be

reached Monday through Thursday from 8:00 am to 5:30 pm. The examiner can be also reached on second alternate Fridays.

Any inquiry of a general nature or relating to the status of this application should be directed to TC customer service whose telephone number is (703) 306-0377.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Amelia Au, can be reached at (703) 308-6604.

The Working Group Fax number is (703) 872-9314.



**Jingge Wu**

**Primary Patent Examiner**